

REMARKS

**I. Introduction**

Claims 1-10 and 43-55 are pending. Claims 11-20, 22, 23, 26-29 and 38-40 have been cancelled to expedite the prosecution of the present application and to reduce the number of remaining issues in response to the Final Office Action. Applicants do not acquiesce that the examiner's § 103(a) rejection of these claims is proper even though these claims have been cancelled. Applicants reserve the right to present these claims for examination in the future.

Applicants appreciate the courtesy extended by Examiner Miller in conducting a personal interview with Applicants' representative on September 6, 2002, which is summarized on form PTO-413. Applicants appreciate the request by the Examiner to provide additional evidence of unexpected results in addition to the previously submitted Rule 132 Declaration by Mr. Iwasaki. Applicants did not have sufficient time to conduct additional experiments before the six month statutory period for response to the Final Office Action. However, Applicants reserve the right to submit additional evidence of unexpected results in the future.

In response to the request in paragraph 3 of the Office Action for a supplemental reissue declaration, Applicants will provide the supplemental reissue declaration upon indication that all pending claims are allowable.

**II. The Objections Should Be Withdrawn**

Claims 38 and 55 were objected to as being of an improper dependent form. Claim 38 has been cancelled rendering the objection moot. Applicants submit that claim 55 is in proper dependent form. Claim 55 recites that the magnetoresistance effect element of claim 43 comprises a part of a magnetic head. Thus, claim 55 specifies the location of the magnetoresistance effect element of claim 43. Applicants submit that claim 55 is a proper dependent claim which complies with Rule 1.75(c) because claim 55 is narrower in scope than claim 43.

The specification was objected to as failing to provide antecedent basis for claim 27. Claim 27 has been cancelled rendering the objection moot. However, Applicants note that support for claim 27 is provided at least in Figure 10 and in Embodiment 8 of U.S. Patent 5,552,949. Applicants submit that the specification provided a proper antecedent basis for claim 27.

### **III. The § 103(a) Rejection Should Be Withdrawn**

Claims 11-20, 22, 23, 26-29, 38-40 and 43-55 were rejected under §103(a) as being unpatentable over Dieny in view of Lin. Regarding the rejection of claims 43-55, the Examiner took Official Notice that one of ordinary skill in the art would have utilized a CoFe ferromagnetic layer in the device of Dieny. This rejection is respectfully traversed.

#### **A. No Motivation To Add A FeCo Layer Into Device Of Dieny**

As discussed during the interview, Applicants challenge the Official Notice. The Office Action relied upon patents to Iwasaki (US '832) and Liao to support the Official Notice that one of ordinary skill in the art would have used a CoFe ferromagnetic layer in the device of Dieny.

However, Iwasaki (US '832) is not prior art against the present application under §103(a). Iwasaki is commonly assigned as the present application and was published after the effective filing date of the present application. Therefore, Iwasaki is not prior art in view of §103(c). Iwasaki thus cannot be used to support the Official Notice taken in the Office Action. This strongly undercuts the asserted Official Notice in itself.

Liao teaches a FeCo ferromagnetic layer in the abstract, but provides no suggestion or motivation for adding a FeCo layer into a spin valve film or to use the FeCo layer in combination with an antiferromagnetic layer. In order to establish a prima facie case of obviousness, Liao must provide some motivation to specifically change from the ferromagnetic layers that Dieny teaches to use and instead

substitute in the FeCo layer of Liao. The Office Action states that it is "within the knowledge of a skilled artisan to select a known material on the basis of its suitability for the intended use". In this case, applying that principle, one of ordinary skill in the art would have chosen one of the known ferromagnetic materials specified by Dieny to use in the device of Dieny rather than choose to substitute the materials of Dieny with the CoFe material of Liao without any indicated suggestion or motivation to do so because Liao provides no indication of using CoFe material in the context of a spin valve film or with an antiferromagnetic layer. That reference does not motivate one of ordinary skill in the art to change from Dieny's specific teachings.

The Office Action also states that "lacking any unobvious or unexpected results, the use of CoFe for ferromagnetic layer would have resulted through routine engineering experimentation." Applicants respectfully disagree. First, Applicants demonstrated the unexpected results in Mr. Iwasaki's Rule 132 Declaration. Mr. Iwasaki's declaration points out the unexpected increase in the MR ratio from 3.9% to 7% in a spin valve magnetoresistance element that included two CoFe ferromagnetic layers and a PtMn antiferromagnetic layer. Second, "routine engineering experimentation" is not a proper motivation to substitute one of Dieny's ferromagnetic layers with a CoFe layer. At best, this is reliance on an impermissible "obvious to try" rationale to support the §103(a) rejection. See MPEP ¶ 2145(X)(B). The applied prior art does not teach or suggest using a FeCo ferromagnetic layer in spin valve film, as recited in claim 43.

#### **B. Unexpected Results**

Furthermore, as discussed during the interview, the use of PtMn antiferromagnetic layer in a spin valve film recited in claim 43 achieves an unexpected result. In other words, even if the Patent Office could demonstrate a *prima facie* case of obviousness, the claimed invention provides unexpected results that make the claims patentable. The spin valve MR ratio is significantly increased

when the PtMn antiferromagnetic layer is used compared to other antiferromagnetic layers, as discussed in Mr. Iwasaki's Rule 132 Declaration.

The Office Action states that Lin teaches that an improved corrosion resistance is achieved by using a PtMn layer and that this is motivation to substitute the PtMn antiferromagnetic layer of Lin into the device of Dieny. The Office Action asserts that this makes the results of the claimed element expected. Applicants respectfully disagree.

As discussed during the interview, neither Lin nor Dieny recognize the unexpected result that an increase in MR ratio may be obtained when a PtMn layer is used. Thus, while the prior art teaches that PtMn improves corrosion resistance, it does not teach that a PtMn layer unexpectedly greatly improves the MR ratio of a spin valve film. The result of the claimed magnetoresistance effect element unexpected. Thus, even if there was motivation to combine Dieny and Lin, that only established a *prima facie* case of obviousness of cancelled claim 11. Applicants have demonstrated unexpected results that fully rebut a prima facie case of obviousness.

### **C. Rejection Of Claim 43 Is Based On Hindsight Reconstruction**

Claim 43 recites a spin valve film in which an antiferromagnetic layer comprises an alloy comprising Pt and Mn and in which a ferromagnetic layer consists essentially of CoFe. Dieny discloses several material usable as antiferromagnetic and ferromagnetic layers, but discloses neither PtMn nor CoFe recited in claim 43. The Office Action relies on a second prior art reference, Lin, for the teaching of a PtMn antiferromagnetic layer and on a third prior art reference, Liao, for the teaching of a CoFe ferromagnetic layer in the § 103(a) rejection of claim 43.

Applicants submit that this rejection is based on an improper hindsight reconstruction gleaned from the Applicants' specification. One of ordinary skill in

the art would not be motivated to substitute the antiferromagnetic material of Dieny with that of Lin and then to substitute the ferromagnetic material of Dieny with that of Liao without relying on impermissible hindsight.

#### IV. Conclusion


Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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